



# DELIVERING THE INDUSTRY'S MOST CUSTOMIZABLE HAIL DETECTION



## Introduction

The growing threat of large, damaging hail has become a major concern across the solar industry since the 2019 Midway Solar Farm event, which caused more than \$70 million in damage. Since then, several high-profile incidents have resulted in similar or even greater losses. Solar owners, operators, EPCs, and O&M providers increasingly depend on commercial weather intelligence to provide accurate and timely hail alerts that allow them to take preventive action. The following sections explain why Indji Watch provides the industry's most advanced and customizable hail detection and alerting capabilities.

## Patented weather monitoring

Indji Watch leverages two U.S. patents—US10089854B2 and US12380794B2, *Alert Generation System and Method*. These patents describe a unique process that analyzes real-time measurement data to create or update models of physical

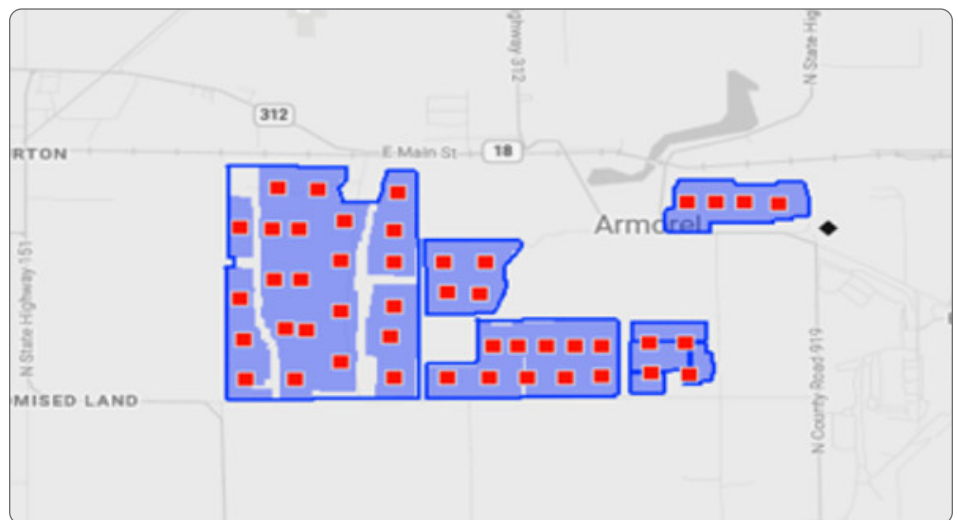


Figure 1.

assets and environmental conditions, determines relationships between them, and generate alerts when predefined thresholds are met.

A key advantage of this patented system is its direct monitoring of a model of the real world solar asset. While many alerting systems represent an asset using a single pin or marker, Indji Watch models the site's actual configuration, including the layout of panels, inverters,

substations, and other key features supplied by the client (Fig 1). This asset-specific modeling ensures greater precision in determining when and where a hazard will occur. The result is more accurate hail detection and alerting performance—further reinforced by the customizable monitoring zones described in the next section.



## Asset hail monitoring zone customization

Because large, damaging hailstorms are often unpredictable, effective hail monitoring requires flexibility. Indji Watch allows users to define a custom hail monitoring zone around each asset, ensuring early detection of storms that could pose a risk.

In the example comparison below, the Indji Watch monitoring zone (Fig. 2) conforms exactly to the shape and orientation of the actual solar site, with a customizable buffer distance per asset. Competing systems (Fig. 3) use a single pin or circular radius that

fails to represent the true site layout. This simplified approach could lead to missed or delayed alerts for portions of the site. Indji Watch's intelligent mapping ensures the entire facility is monitored accurately, providing earlier and more reliable notifications.

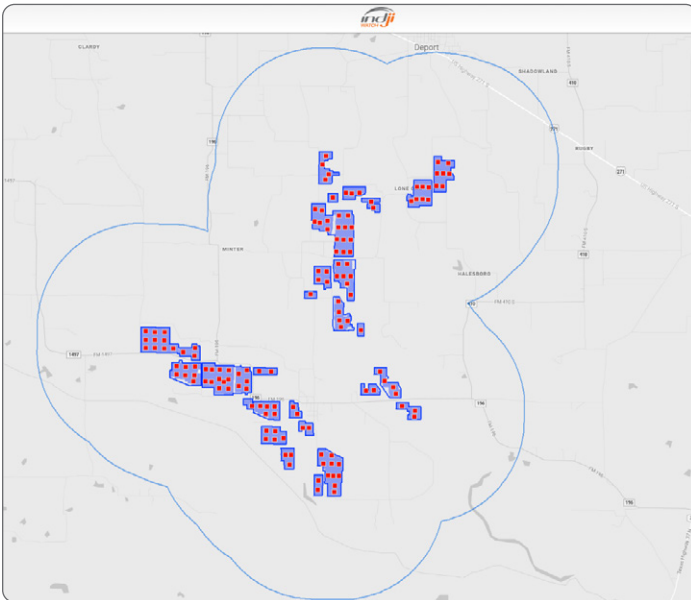


Figure 2

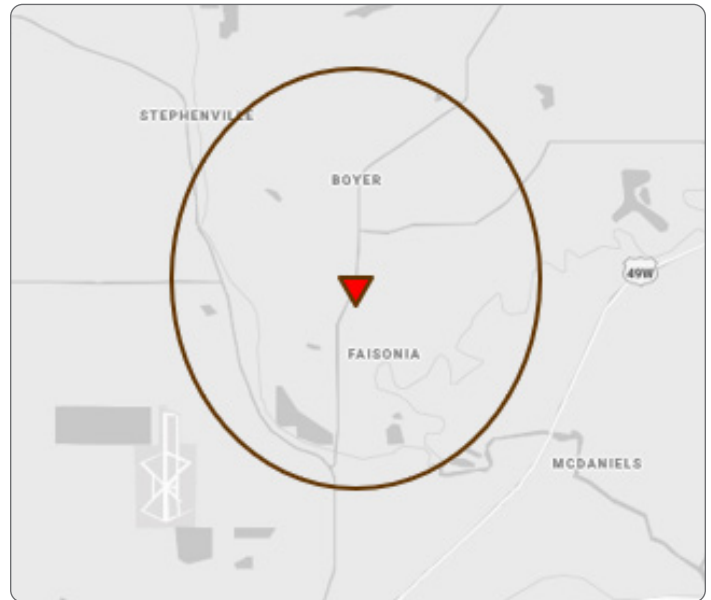


Figure 3

## Hail size customization

Solar assets differ in age, technology, and construction, which means their tolerance to hail impact also varies. Indji Watch enables clients to define hail size thresholds unique to each site, taking into account the geographic hail risk and equipment characteristics.

Older installations may feature thinner glass and slower tracking systems, while newer projects might include thicker glass panels, stronger frames, or rapid stow motors capable of reaching steep stow angles up to 80 degrees in a matter of minutes. A one-size-fits-all alerting model cannot adequately protect diverse assets across a fleet. Indji Watch allows clients to tailor hail monitoring to their specific risk tolerance and asset capabilities ensuring each site receives the most relevant and actionable alert.



## Alert customization

By combining full asset mapping, intelligent monitoring zones, and customizable hail thresholds, Indji Watch delivers personalized hail alerts that match each client's operational needs and risk profile. These capabilities allow operators to make informed decisions faster and reduce the chance of costly equipment loss or downtime.

## Radar's role in issuing hail alerts

Doppler radar is the backbone of hail detection and ultimately what is used to issue most severe thunderstorms warnings for hail. Doppler Radar provides important storm attribute data, including storm rotation, hail probability and estimated maximum hail size, updated approximately every two minutes. Some commercial weather vendors rely on hail probability and estimated

hail size attributes to identify hail within a thunderstorm. However, these automated indicators are momentary estimates. They indicate hail size potential and probability within a specific radar scan and may change or disappear with the next update. Regarding the hail probability value that is not a percentage chance of a site impact, but rather the probability of hail being present when the radar scan occurred.

Storms with hail can form and dissipate quickly, and therefore radar is an essential tool, as frequent radar scans are vital for accurate real-time alerts. Indji Watch's alerting system incorporates this high-frequency radar data to identify threats with greater temporal precision, reducing the likelihood of missed events.



Doppler Radar Station



## Leveraging meteorological expertise

Indji Watch enhances automated radar detection by incorporating human meteorological expertise. Across 122 National Weather Service (NWS) offices nationwide, skilled meteorologists continuously analyze radar imagery, storm structure, and local atmospheric conditions to issue hail-related warnings and statements.

These professionals understand local weather patterns and terrain influences that automated data sets such as storm attribute data often overlook.

It is from this experience and expertise that Meteorologists create NWS bulletins related to hail, then Indji Watch cross-references those

with asset monitoring zones and hail thresholds. The Indji Watch approach combining radar-based detection with expert meteorological analysis ensures superior reliability and accuracy. The result is a more complete picture of storm evolution and potential hail impacts to specific solar assets.



National Weather Service Meteorologist

## The superior solution for solar operators

For a 500 MW solar facility located in hail-prone regions, precision and customization are essential. Indji Watch provides intelligent, asset-specific hail alerts that adapt to each client's risk profile, technology, and operational process. Whether a site uses manual protocols, automated tracker integration, or in-house mitigation systems via API, Indji Watch seamlessly supports all approaches.

By integrating patented asset modeling, advanced radar data, and meteorologist-driven insights, Indji Watch delivers the most accurate and dependable hail alerting available to the solar industry. For organizations seeking to safeguard their investments, minimize downtime, and strengthen operational resilience, Indji Watch is the superior solution.